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A. D. 1861. SEP. 30. N° 2435.
LUSH'S SPECIFICATION.

FIG. 2.

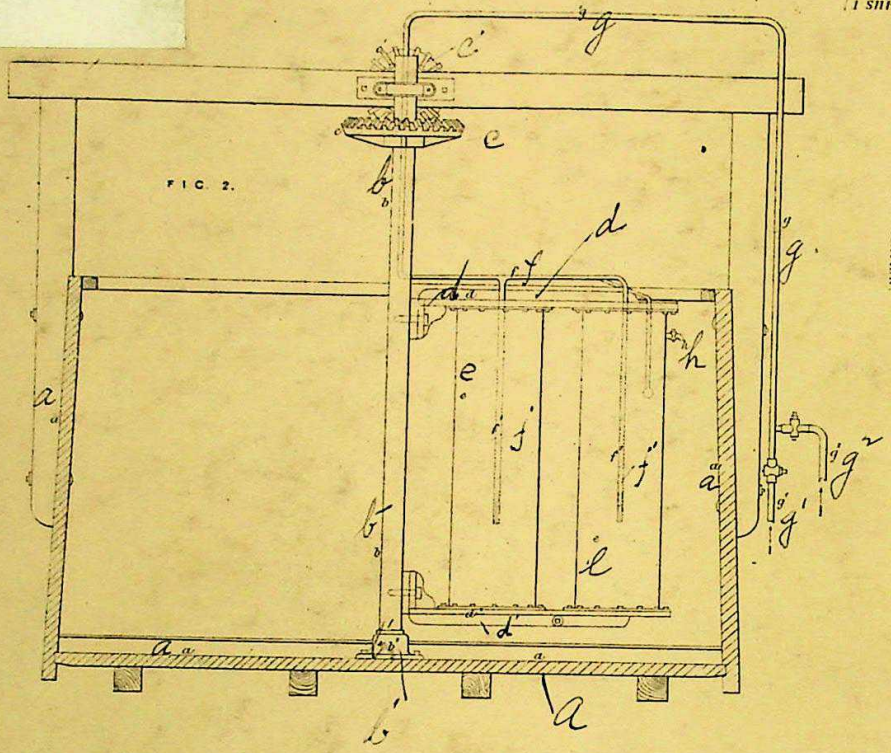
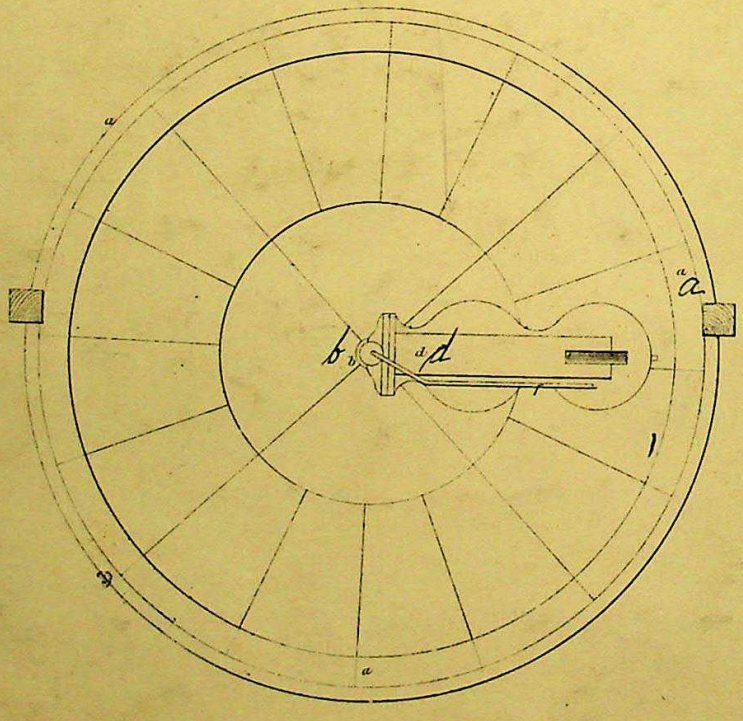


FIG. 1.



86

ALCOHOL
Mashing
Apparatus
Mash-tubs
Under rakes.
Mashing
2435
Dw 32
Q 257
Invention
193
56.4

A.D. 1861, *30th* SEPTEMBER. N° 2435.

Mashing Attemperators.

LETTERS PATENT to Joseph Lush, of St. George's Square, Portsea, in the County of Hants, Brewer, for the Invention of "IMPROVEMENTS IN MASHING ATTEMPERATORS."

Sealed the 21st March 1862, and dated the 30th September 1861.

PROVISIONAL SPECIFICATION left by the said Joseph Lush at the Office of the Commissioners of Patents, with his Petition, on the 30th September 1861.

I, JOSEPH LUSH, of St. George's Square, Portsea, in the County of Hants, Brewer, do hereby declare the nature of the Invention for "IMPROVEMENTS IN MASHING ATTEMPERATORS," to be as follows:—

The object of this Invention is to avoid the injurious effects of what are known in brewings as "raw worts," by which much of the useful portion of the malt is lost, and the quality of the beer is deteriorated; this is obviated by the use of my Invention, which raises the temperature of the mash to any required heat, and retains it at such temperature as long as may be required, and in a manner which produces no damage to the mash, as is the case with most if not all the mashing attemperators at present in use.

For the purpose of carrying out my improvements, I fix in the mash tun an upright shaft, which is carried at the top by suitable bearings, and at the

bottom by a shoe or step fixed in the bottom of the mash tun; this shaft is caused to revolve by gearing, driven by steam, or other motive power, and it is made hollow for a portion of its length to carry the steam and water required in using the attemperator; into this shaft are bolted or otherwise secured one or more arms, which are placed at right angles to the upright shaft close to the false bottom of the mash tun, and are carried nearly to the length of the inside diameter of the mash tun. On to each of these arms are cast one or more flanges, and to these flanges are fixed by bolts or otherwise vessels of copper or other material of suitable shape (which may be either round or oval, parallel, coned, or otherwise), which stand upright on the arm or arms, and which are therefore parallel with the upright shaft; these copper vessels are connected at the top to an arm which is fixed above them on the upright shaft, and which is perfectly parallel with the lower arm; and where more than one copper vessel is used on each arm they are formed hollow, so that the copper vessels may be in communication with one another; these vessels are filled with heated water up to a point indicated by a guage cock fixed in the side of the vessel, and they are furnished with a safety valve to remove any superfluous pressure, and a thermometer to indicate the temperature of the water in the interior of them, and each copper vessel is furnished with a pipe descending from the top arm nearly to the bottom inside of it, and connected with a regulating cock to the upright hollow shaft. The top of this upright hollow shaft is furnished with a stuffing box and gland forming a joint for the pipe or pipes supplying steam or water, as required, to the attemperator.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Joseph Lush in the Great Seal Patent Office on the 29th March 1862.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH LUSH, of St. George's Square, Portsea, in the County of Hants, Brewer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirtieth day of September, in the year of our Lord One thousand eight hundred and sixty-one, in the twenty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Joseph Lush, Her special licence that I, the said Joseph Lush,

my executors, administrators, and assigns, or such others as I, the said Joseph Lush, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN MASHING ATTEMPERATORS," upon the condition (amongst others) that I, the said Joseph Lush, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Joseph Lush, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say :—

The object of this Invention is to avoid the injurious effects of what are known in brewings as "raw worts," by which much of the useful portion of the malt is lost, and the quality of the beer is deteriorated; this is obviated by the use of my Invention, which raises the temperature of the mash to any required heat, and retains it at such temperature as long as may be required, and in a manner which produces no damage to the mash, as is the case with most, if not all, the mashing attemperators at present in use.

For the purpose of carrying out my improvements, I fix in the mash tun an upright shaft, which is carried at the top by suitable bearings, and at the bottom by a shoe or step fixed in the bottom of the mash tun; this shaft is caused to revolve by gearing driven by steam or other motive power, and it is made hollow for a portion of its length to carry the steam and water required in using the attemperator. On to this shaft are bolted or otherwise secured one or more arms, which are placed at right angles to the upright shaft close to the false bottom of the mash tun, and are carried nearly to the length of the inside diameter of the mash tun. On to each of these arms are cast one or more flanges, and to these flanges are fixed by bolts or otherwise vessels of copper or other material of suitable shape (which may be either round or oval, parallel, coned, or otherwise), which stand upright on the arm or arms, and which are therefore parallel with the upright shaft; these copper vessels are connected at the top to an arm which is fixed above them on the upright

shaft, and which is perfectly parallel with the lower arm; and where more than one copper vessel is used on each arm they are formed hollow, so that the copper vessels may be in communication with one another; these vessels are filled with heated water up to a point indicated by a gauge cock fixed in the side of the vessel, and they are furnished with a safety valve to remove any superfluous pressure, and a thermometer to indicate the temperature of the water in the interior of them, and each copper vessel is furnished with a pipe descending from the top arm nearly to the bottom inside of it, and connected with a regulating cock to the upright hollow shaft. The top of this upright hollow shaft is furnished with a stuffing box and gland forming a joint for the pipe or pipes supplying steam or water, as required, to the attemperator.

And in order that my Invention may be most fully understood and readily carried into practice, I will proceed to describe the Drawing hereunto annexed.

Description of the Drawing.

Figure 1 shows a plan, and Figure 2, a vertical section of a mash tun, having apparatus applied thereto, according to my Invention.

a, *a*, is the mash tun, in which the upright shaft *b* is supported in bearings, as shown, and resting on the bottom of the vessel *a* in the shoe or step b^1. Rotary motion is communicated to the shaft *b* from a steam engine or other motive power, by means of the bevil toothed wheels *c* and c^1. The shaft *b* is formed hollow or tubular down a portion of its length, in order to admit steam or water, as required whilst using the attemperator. *d*, d^1, are arms fixed at right angles on to the shaft *b*. The arms *d* and d^1 have plates or flanges cast or formed thereon, to which the upright hollow copper or other metal vessels *e*, *e*, are secured by bolts or otherwise; *f* is a pipe, connected with the hollow shaft *b*, and having branch pipes f^1, which descend into the vessels *e*, *e*, and by which they can be supplied with water or steam from time to time, as required, by means of the supply pipe *g*. This pipe has branches g^1, g^2, leading to the liquor tank and steam boiler. The vessels *e*, *e*, are when in use filled with heated water to a point indicated by the gauge cock *h*, and suitable safety valves and thermometers may be applied to the vessels to regulate the pressure of steam and temperature of the water contained therein.

The form and arrangement of this apparatus may be varied as required, both as to the number, shape, and dimensions of the copper or other metal attemperators, and as to the manner of fixing them to the arms and to

the main centre shaft, as well as to the particular method of applying the supply of liquor and steam to the apparatus, without departing from the principle of my Invention, which consists in arranging apparatus for raising the temperature of the mash to any required degree of heat, and retaining it at such temperature, as long as required, by the means herein described.

In witness whereof, I, the said Joseph Lush, have hereunto set my hand and seal, this Twenty-seventh day of March, in the year of our Lord One thousand eight hundred and sixty-two.

JOSEPH LUSH. (L.S.)

Witness,

JOSEPH BOWMAN, jun^r^.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1862.